Chapter 60 – Neurologic Function

**Table 60.1 Major Neurotransmitters: Source/Action p1832 1 Question**

|  |  |  |
| --- | --- | --- |
| **Neurotransmitter** | **Source** | **Action** |
| **Acetylcholine**  (major transmitter of the parasympathetic nervous system) | Many areas of the brain; autonomic nervous system | Usually excitatory; parasympathetic effects sometimes inhibitory (stimulation of heart by vagal nerve) |
| **Serotonin** | Brain Stem, hypothalamus, dorsal horn of the spinal cord | Inhibitory, helps control mood and sleep, inhibits pain pathways |
| **Dopamine** | Substantia nigra and basal ganglia | Usually inhibits, affects behavior (attention, emotions) and fine movement |
| **Norepinephrine**  (major transmitter of the sympathetic nervous system) | Brain stem, hypothalamus, postganglionic neurons of the sympathetic nervous system | Usually excitatory; affects mood and overall activity |
| **Gamma-aminobutyric acid (GABA)** | Spinal cord, cerebellum, basal ganglia, some cortical areas | Inhibitory |
| **Enkephalin, endorphin** | Nerve terminals in the spine, brain stem, thalamus and hypothalamus, pituitary gland | Excitatory pleasurable sensation, inhibits pain transmission |

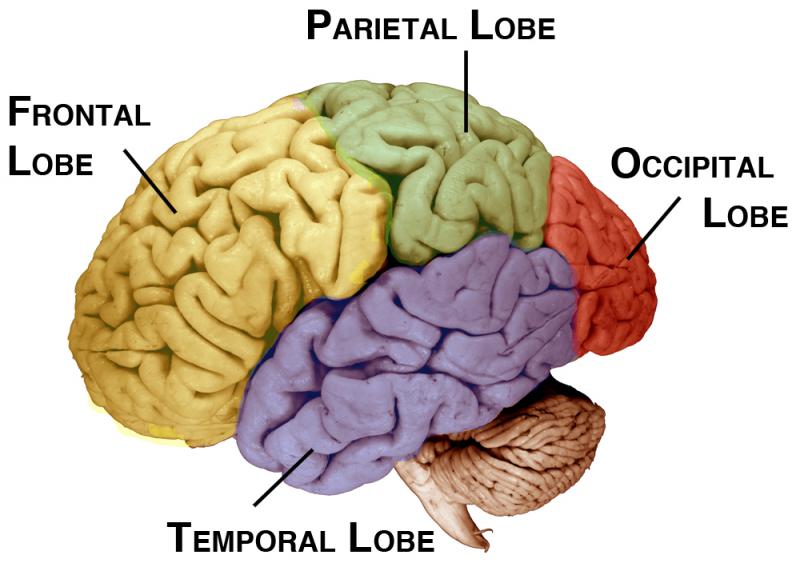
**CNS-Brain Stem: Cranial nerves and Reflex centers 1 Question**

(Brain Stem p1833- cranial nerves, reflex centers)

* + Midbrain
    - Connects the Pons (and cerebellum) with the cerebral hemispheres
    - Contains sensory and motor pathways
    - Serves as the center for auditory and visual reflexes
      * Cranial nerves III and IV originate here (III & IV – responsible for eye movements)
  + Pons
    - Contains motor and sensory pathways
    - Helps to regulate respiration (in some portions)
    - Cranial nerve V and VIII (V is facial sensation (sensory and motor), VIII is auditory)
  + Medulla Oblongata
    - Motor fibers from Brain to Spinal Cord are located in the medulla
    - Sensory fibers from Spinal Cord to Brain are located in the medulla
    - Cranial nerves IX through XII originate in the medulla
      * Lecture mentioned XI and XII (efferent/motor and motor (swallowing/speech)
    - Reflex centers for
      * Blood Pressure
      * Coughing
      * Heart rate
      * Respiration
      * Sneezing
      * Swallowing
      * Vomiting
    - Reticular formation, responsible for Sleep Wake cycle, begins in the medulla and connects with numerous higher structures

**CNS-Brain: Different lobes and there function 1 Question**

(Lobes of the Brain – Functions p1832)



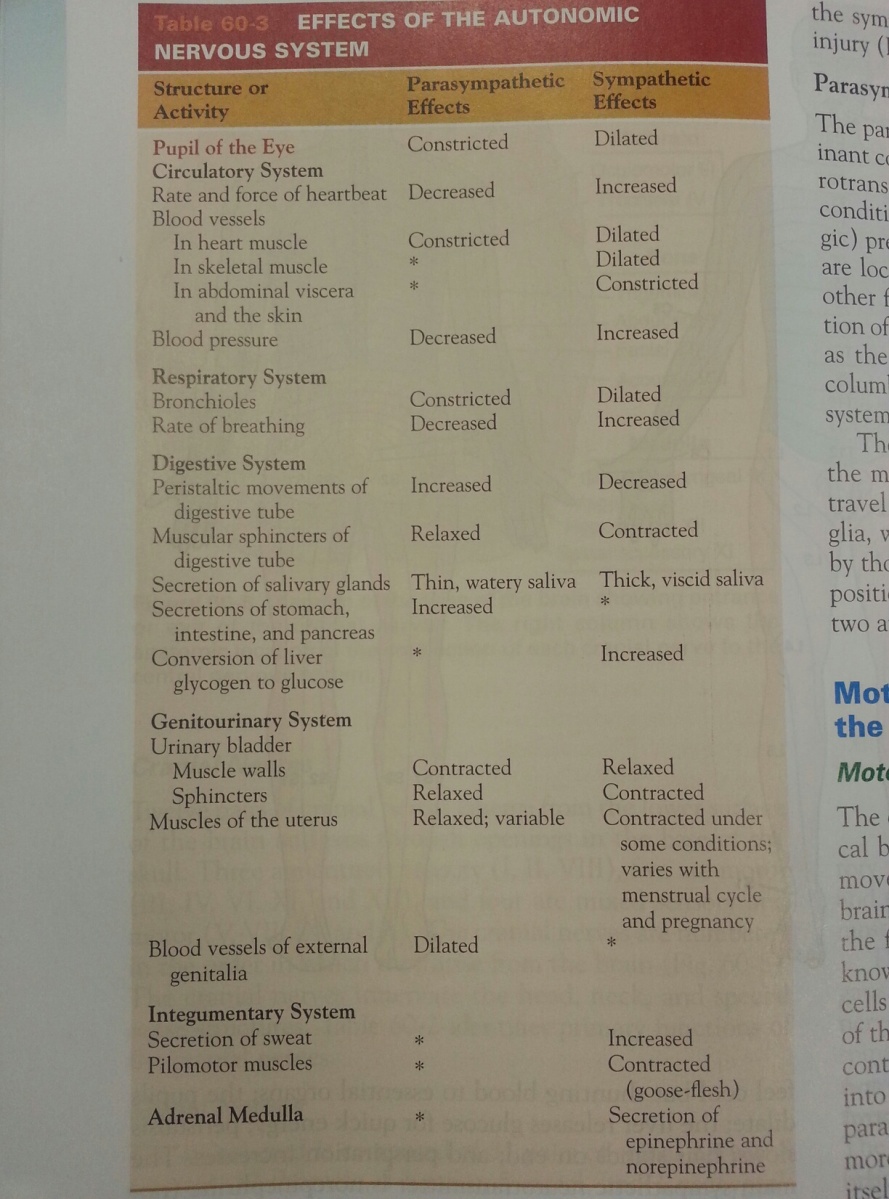
* Frontal Lobe
  + Major Functions are **CAMI**
    - **C**oncentration
    - **A**bstract thought
    - **M**otor function
    - **I**nformation storage/memory
  + Brocas area – motor control of speech
  + Responsible for affect, judgment, personality and inhibitions
* **Parietal Lobe - predominantly sensory lobe**
  + Major Functions are **LASER**
    - **L**eft-right orientation
    - **A**nalyze sensory information
    - **S**ize and shape discrimination
    - **E**ssential to a person’s Awareness of Body position in space
    - **R**elays the interpretation of info to other cortical areas
* **Occipital Lobe** 
  + Major Functions are **MV**
    - **M**emory
    - **V**isual Interpretation
* **Temporal Lobe – Auditory**
  + Major Functions are **LAM**
    - **L**anguage and music understanding
    - **A**uditory receptive area
    - **M**emory of Sound

**The spinal tract: Six ascending spinal tracts and their function 1 Question**

(Spinal Tract p1835 6 ascending tracts and associations)

* Fasciculus Cuneatus and Fasciculus Gracilis (cross to opposite side in the medulla)
  + Knows as the “posterior columns”
  + Conduct Sensations of
    - Deep touch
    - Pressure
    - Vibration
    - Position
    - Passive motion from same side of the body
* Anterior and Posterior spinocerebellar (ascend essentially uncrossed; end in cerebellum)
  + Conduct sensory impulses from muscle spindles
    - Providing necessary input for coordinated muscle contraction
* Anterior and Lateral spinothalamic (cross to opposite side of the cord and ascend to the brain; end in thalamus)
  + Responsible for conduction of
    - Pain, temperature
    - Proprioceptin
    - Fine touch
    - Vibratory sense from the upper body to the brain

**Table 60.3 Effects of the autonomic nervous system p1838 1 Question**

****

**Table 60.4 Comparison of upper motor neuron 1 Question**

|  |  |
| --- | --- |
| **Upper Motor Neuron Lesions** | **Lower Motor Neuron Lesions** |
| Loss of voluntary control | Loss of voluntary control |
| Increased muscle tone | Decreased muscle tone |
| Muscle spasticity | Flaccid muscle paralysis |
| No muscle atrophy | Muscle |
| Hyperactive and abnormal reflexes | Absent or decreased reflexes |

**Examining the motor system: Muscle strength 1 Question**

(Muscle Strength p1844 - Differences between strength points (scale of 5-0))

* 5 points
  + Full power of contraction against gravity
  + Resistance or normal muscle strength
* 4 points
  + Fair but not full strength against gravity
  + Slight weakness or Moderate amount of resistance
* 3 points
  + Just sufficient strength to overcome the force of gravity
  + Moderate weakness
* 2 points
  + Ability to move, but not overcome the force of gravity
  + Severe weakness
* 1 point
  + Minimal contractile power
    - Weak muscle contraction can be palpated but NO MOVEMENT IS NOTED
  + VERY severe weakness
* 0 points
  + No movement

**Chart 60.4 Documenting reflexes 1 Question**

(Chart 60-4 Documenting Reflexes (scale of 0 to 4))

* 0: no response
* 1+ : Diminished (hypoactive)
* 2+: Normal
* 3+: Increased (may be interpreted as normal)
* 4+: Hyperactive (hyperreflexia)
* Also make note that when assessing the PLANTAR reflexes:
  + Downward arrow() on the chart/stick figure means NORMAL plantar response
  + Upward arrow() on the chart/stick figure means the ABNORMAL plantar response

**Diagnostic Evaluation: CT, MRI, Cerebral Angiography, EEG, Lumber Puncture 1 Question**

(Diagnostic Evaluation Procedures p 1850)

* CT Scan (Computed Tomography) – narrow x-ray beam to scan body parts in successive layers
  + Can be done with or without contrast
  + Provide cross-sectional views of the brain
    - Able to distinguish differences in tissue densities of the skull, cortex, subcortical structures and ventricles.
  + Abnormalities detected on CT include
    - Tumor or other masses
    - Infarction
    - Hemorrhage
    - Displacement of ventricles
    - Cortical atrophy
  + Must lie perfectly still; movement distorts the image
  + Quick and painless
  + High degree of sensitivity for detecting lesions
  + Used to direct surgical intervention
* MRI (Magnetic Resonance Imaging) – powerful magnetic field to obtain images of different areas of the body
  + Can be done with or without contrast
  + Does NOT involve Ionizing radiation
  + Particularly useful in diagnosis of
    - Brain tumor
    - Stroke
    - Multiple sclerosis
    - Newer MRI applications allow imaging of brain blood flow and metabolism
  + Used to direct surgical intervention
* Cerebral Angiography – x-ray study of the cerebral circulation with a contrast agent injected into selected artery.
  + Performed by threading a catheter through the femoral artery in the groin and up to the desired vessel
    - Direct puncture of the carotid artery or retrograde injection of a contrast agent into the brachial artery may be performed
  + Uses
    - Vessel patency
    - Identify presence of collateral circulation
    - Provide detail on vascular anomalies
    - Intervential procedures, such as placing coils in an aneurysm or arteriovenous malformation
* EEG (Electroencephalogram) – a record of the electrical activity generated in the brain.
  + Obtained through electrodes applied on the scalp or through microelectrodes placed within the brain tissue
  + Provides an assessment of cerebral electrical activity
    - Uses for Diagnosing and evaluating
      * Seizure disorders
      * Coma
      * Organic brain syndrome
      * Determination of brain death
  + Tumors, brain abscesses, blood clots and infection MAY cause abnormal patterns in electrical activity
* Lumbar Puncture (spinal tap)- insertion of a needle into the lumbar subarachnoid space to withdraw CSF (cerebrospinal fluid)
  + Uses
    - Obtain CSF for examination
    - Measure and reduce CSF pressure
    - Determine the presence or absence of blood in the CSF
    - Administer medications intrathecally (into the spinal cord)
  + Needle is inserted in the subarachnoid space between L3 and L4 OR between L4 and L5
    - Spinal cord ends at the L1 vertebrate, so placing the needle as stated above prevents the possibility of puncturing the spinal cord upon insertion
  + Patient should be relaxed – anxiousness or tenseness can increase the pressure reading

**CHAPTER 64**

**Meningitis p1951 – Clinical Manifestations 1 Question**

* Decreased Neck mobility due to stiffness and pain
* Positive Kernig’s sign – leg cannot be completely extended when patient is lying w/thigh flexed on the abdomen
* Positive Brudzinski sign – chin to chest produces flexion of the knees and hips (like a partial sit up position)
* Photophobia – extreme sensitivity to light
* Rash in about 50% of patients with N. meningitides infection

**Meningitis p1952 – Nursing Management 1 Question**

* Neurologic status and vitals are commonly assessed. Pulse ox, arterial blood gas etc
* Cuffed endotracheal tube & mechanical ventilation may be necessary to maintain adequate tissue oxygenation
* BP (using an arterial line) is monitored for incipient shock (precedes cardiac/respiratory failure)
* Rapid IV fluid replacement may be prescribed
* Measures are taken to reduce body temp as quickly as possible
* Other important components
  + Protecting the patient from injury secondary to seizure activity or altered LOC (level of consciousness)
  + Monitor DAILY body weight, serum electrolytes and urine volume, specific gravity and osmolarity
  + Prevent complications associated with immobilization such as pressure ulcers and pneumonia
  + Institute infection control precautions until 24hrs after initiation of antibiotic therapy
    - Oral and nasal discharge is considered infectious

**Brain Abscess: Pathophysiology/Nursing Management 1 Question**

(Assessing for Brain Abscesses- Chart 64-2 p1953)

* Pathophysiology
  + Brain abscess is a collection of infectious material within the tissue of the brain
  + Bacteria is the most common causative organism
  + Most common predisposing conditions are
    - Otis media
    - Rhinosinusitis
  + Can also result from
    - Intracranial surgery
    - Penetrating head injury
    - Tongue piercing
  + Organisms causing brain abscess may reach the brain by hematologic spread from the
    - Lungs
    - Gums
    - Tongue
    - Heart
    - Wound
    - Intra-abdominal infection
* Nursing Management
  + - Continuing to assess the neurologic status
    - Administering medications/assess and document responses to meds
    - Assessing the response to treatment
    - Providing supportive care
    - Blood test results, specifically glucose and potassium levels, close monitoring when administering corticosteroids
    - Patient safety

|  |  |
| --- | --- |
| Lobe | Signs and Symptoms |
| Frontal | Frontal Headache, Aphasia (expressive), Seizures, Hemiparesis (FASH) |
| Temporal | Facial Weakness, Localized headache, Aphasia, Changes in vision, (FLAC) |
| Cerebellar Abscess | Occipital headache, Nystagmus (rhythmis, involuntary movements of the eye), Ataxia (inability to coordinate movements (ONA) |

**Herpes Encephalitis p1953 – Pathophysiology and Assessment diagnostic finding 1 Question**

* Encephalitis is an acute inflammatory process of the brain tissue
  + HSV is the most common cause of acute encephalitis. There are TWO types of HSV
    - HSV-1 typically affects children and adults
    - HSV-2 most commonly affects neonates and is discussed in pediatric textbooks
* Pathophysiology of encephalitis involves
  + Local necrotizing hemorrhage that becomes more generalized
  + Followed by edema
* Diagnostic Finding
  + EEG
    - Shows diffuse slowing
    - Focal changes in temporal lobe (about 80% of patients)
  + Lumbar Puncture (spinal tap) [to obtain CSF] are used to diagnose HSV encephalitis
    - Polymerase chain reaction (PCR) is the standard test for early diagnosis of HSV-1 encephalitis
      * Identifies the DNA bands of HSV-1 in the CSF
      * Validity of PCR is very high between 3 and 10 days after symptom onset
    - Reveals a high opening pressure
    - Low glucose and high protein levels
    - Viral cultures are almost always negative
  + MRI is used to detect early changes CAUSED by HSV-1
    - Study will show edema in the temporal lobe

**Creutzfeldt - Jakob disease Pathophysiology/Nursing Management 1 Question**

(Creutzfeldt-Jakob Disease p1955 – Pathophysiology , cause)

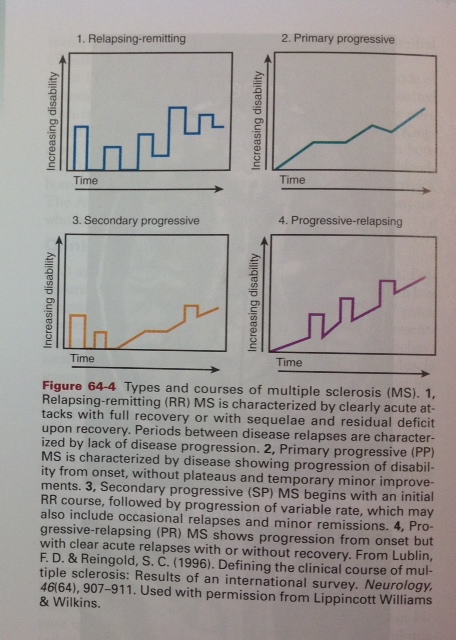
* Basics and Cause
  + Creutzfeldt-Jakob disease (CJD) and variant Creutzfeldt-Jakob disease are a degenerative, infectious neurologic disorders called Transmissible Spongiform Encephalopathies (TSE)
    - CJD is
      * Rare and has no identifiable cause
      * May lay dormant for decades before causing neurologic degeneration
    - vCJD is the human variation of bovine spongiform encephalopathy (BSE)
      * Results from ingestion by humans of prions in infected beef
      * TSEs are caused by **prions**
      * Dormancy is less than 10 years
  + CJD and vCJD share a lack of CNS inflammation
* Pathophysiology
  + Prions lack nucleic acid, which enables them to withstand conventional means of sterilization
    - Exist in lymphoid tissue and blood
    - Believed to be blood born
      * No test yet exists to test blood for infectivity
    - CROSSES the blood-brain barrier
    - Deposited in brain tissue, causes degeneration of brain tissue, cell death occurs
    - Spongiform vacuoles are produced and surrounded by amyloid plaque
  + CJD appears sporadically and it is NOT transmittable by human contact
  + 5% of sporadic CJD result from
    - Contaminated neurosurgical instruments
    - Cadaver-derived growth factor
    - Corneal transplants
* Nursing Management
  + Primarily supportive and Palliative
  + Psychological and emotional support of the patient and family (including through Loss and Grief)
  + Provide for a dignified death
  + Prevention of disease transmission

**Multiple Sclerosis p1956,1957 – Cause, Pathophysiology 1 Question**

* MS is an immune-mediated, progressive demyelinating disease of the CNS, typical manifestation between ages 20-40, affecting women more frequently than men
* Cause is an area of ongoing research
  + Autoimmune activity results in demyelination, but the sensitized antigen has not been identified
  + Some environmental exposure at a young age may play a role
  + Genetic predisposition is indicated by presence of a specific cluster (haplotype) of human leukocyte antigens (HLAs) on the cell wall
  + It is believed that DNA on the virus mimics the amino acid sequence of myelin, resulting in an immune system cross-reaction in the presence of a defective immune system
* Pathophysiology
  + T-cells remain in the CNS and promote the infiltration of other agents that damage the immune system
    - Immune system attack leads to inflammation that destroys myelin and the oligodendroglial cells that produce myelin in the CNS
  + Demyelination interrupts the flow of nerve impulses and results in a variety of manifestation
  + Plaques appear on demyelinated axons, further interrupting the transmission of impulses
  + Areas most frequently affected are
    - Optic nerves
    - Chiasm
    - Tracts
    - Cerebrum
    - Brain stem
    - Cerebellum
    - Spinal cord
  + Axons themselves begin to degenerate, resulting in *permanent and irreversible damage*

**Multiple Sclerosis - Clinical Manifestations p1957,1958 1 Question**

* + Relapse-Remitting (RR) is characterized by CLEARLY acute attacks with full recovery or with sequelae and residual deficit upon recovery
    - Periods between disease relapses are characterized by a lack of disease progression
    - Each relapse is usually complete; however, residual deficits may occur and accumulate over time, contributing to functional decline
    - 80-85% of patients have RR course of MS

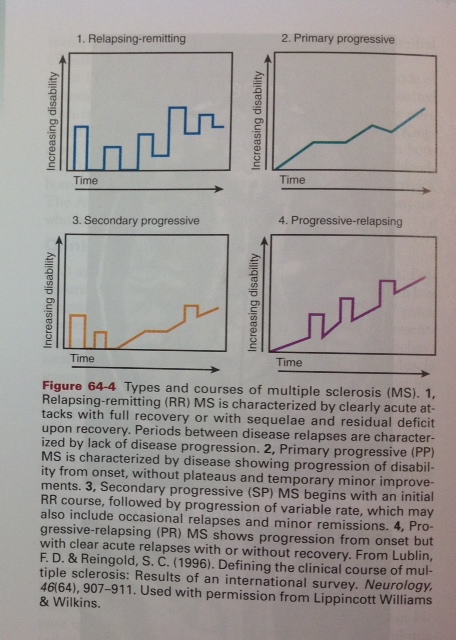


* + Primary progressive (PP) is characterized by disease showing progression of disability from onset, without plateaus and temporary minor improvements
    - Disabling symptoms steadily increase, with rare plateaus and temporary improvement
    - May result in

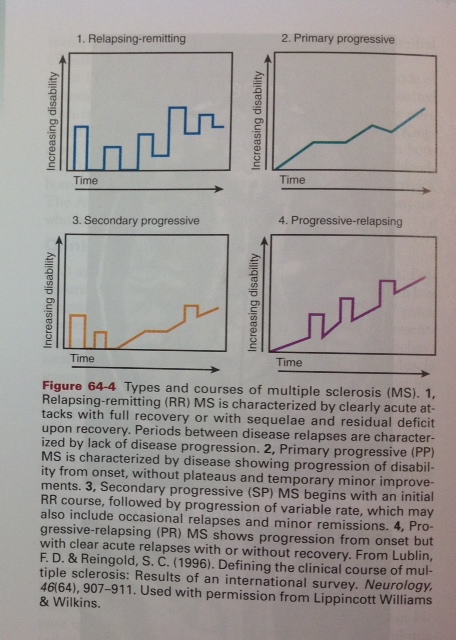
 Quadriparesis Visual Loss

 Cognitive dysfunction Brain stem syndromes

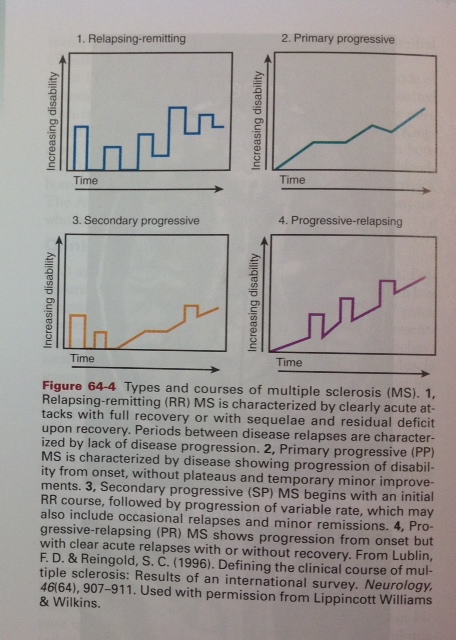
* + - 10% of patients have PP course of MS



* + Secondary Progressive (SP) begins with an initial RR course, followed by progression of variable rate, which may also include occasional relapses and minor remissions
    - Disease progression occurs with or without relapses
    - 50% of patients that start with the RR course will progress to SP course



* + Progressive Relapsing (PR) shows progression from onset but with clear acute relapses with or without recovery
    - Characterized by relapses with continuous disabling progression between exacerbations
    - Lease common presentation at about 5% of cases



**Guillain-Barre Syndrome: Cause/Nursing Process p1966,1967,1968 1 Question**

(Class review mentioned reading pathophysiology too, so I included that as well)

* Cause
  + Autoimmune attack on the peripheral nerve myelin
  + Resulting in
    - Acute, rapid segmental demyelination of peripheral nerves and some cranial nerves
    - Producing ascending weakness with dyskinesia (in ability to execute voluntary movements)
    - Hyporeflexia
    - Paresthesias (numbness)
  + An Antecedent even (most often a viral infection) precipitates clinical presentation
* Pathophysiology
  + Cell that produces myelin in the peripheral nervous system is the Schwann cell
    - Guillain-Barre Syndrome, the Schwann cell is spared, allowing remyelination in recovery phase
  + Result of a cell-mediated and humoral immune attack on peripheral nerve myelin proteins that cause inflammatory demyelination
  + The BEST accepted theory of cause is molecular mimicry
    - An infectious organism contains an amino acid that mimics the peripheral nerve myelin protein
      * The Immune system does not distinguish and attacks/destroys the peripheral nerve myelin protein
* Nursing Process (assuming he is referring to the Nursing Intervention/implication mentioned in class review)
  + Maintaiing Respiratory function
  + Enhancing physical mobility
  + Providing adequate nutrition
  + Improving communication
  + Decreasing Fear and Anxiety
  + Monitoring and Managing potential complications
  + Promoting Home and Community Based Care
    - Teaching patients self-care
    - Continuing Care

**Primary Brain Tumors: Definitions starting on page 1976**

**Gliomas, Meningiomas, Acustic Neuromas, Pituitary Adenomas, Angiomas 1 Question**

(both book and lecture notes presented below)

* **Gliomas** – intercranial tumors. most common type of intracerebral brain neoplasm.
  + Astrocytoma is the most common Glioma
    - Tumor of the brainstem, corpus callosum, cerebrum, cerebellum and optic chiasm
    - Usually spread into surrounding tissues and cannot be totally removed w/o causing considerable damage
  + Categorized into grades dependant on the cellular density, mitosis and appearance
  + Infiltrate any portion of the brain; most common type of brain tumor
* **Meningiomas** –benign encapsulated tumors of arachnoid cells on the meninges
  + Occur most often in areas proximal to the venous sinuses
  + Slow growing and occur most often in middle aged adults
* **Acustic Neuromas** – tumor of your VIII (8th)cranial nerve
  + Nerve responsible for hearing and balance
  + May grow slowly and large before correct diagnosis
  + Loss of hearing
  + Tinnitus
  + Episodes of vertigo
  + Staggering gait
  + When tumor grows large, painful sensation of the face may occur
  + Many can be removed and have a good prognosis
* **Pituitary Adenomas-**cause symptoms as a result of pressure on adjacent structures or hormonal changes such as hyperfuction or hypofunction of the pituitary
  + Pressure effects
    - Headache
    - Visual dysfunction
    - Hypothalamic disorders (sleep, appetite, temperature and emotions)
    - Increased ICP
    - Enlargement and erosion of the sella turcica
* **Angiomas** – masses of abnormal blood vessels found in or on the surface of the brain
  + Occasionally the diagnosis is suggest by the presence of another angioma somewhere in the head or by a bruit (an abnormal sound) that is audible over the skull
  + At risk for hemorrhagic stroke

**Chart 65-1 Classification of brain tumors p1976 1Question**

* Interacerbral (or intercranial) Tumors
  + **Gliomas – infiltrate any portion of the brain; most common type of brain tumor**
    - **Astrocytomas (grades I and II)**
    - Glioblastoma multiforme (astrocytoma grades III and IV)
    - Oligodenedrocytoma (low and high grades)
    - Ependymoma (grades I to IV)
    - Medulloblastoma
* Tumors Arising from Supporting Structures
  + **Meningiomas**
  + Neuromas (**acoustic neuroma**, schwannaoma)
  + **Pituitary adenomas**
* Developmental Tumors
  + **Angiomas**
  + Dermoid, epidermoid, teroma, craniopharyngioma
* Metastatic Lesions

**Primary Brain Tumors: p1980 Nursing Management 1 Question**

* Patients may be at an increased risk for aspiration as a result of cranial nerve dysfunction
* Gag reflex should be evaluated preoperatively
  + Care for patients with a diminished gag response include
    - Teaching to direct food and fluids toward the UNAFFECTED side
    - Sit upright to eat
    - Offer a semi-soft diet
    - Have suction readily available
* Nursing Interventions/care activities include
  + Neurologic checks and reorientation to person, time and place
    - Patients with changes in cognition require frequent reorientation and use of orienting devices such as
      * Personal possessions
      * Photographs
      * Lists
      * Clock
    - Patients needing reorientation should also have
      * Supervision of and assistance with self-care
      * Ongoing monitoring and intervention for prevention of injury
  + Monitor vitals
  + Maintain neurologic flow chart
  + Spacing of nursing interventions to prevent rapid increase in ICP
  + Motor function checked at intervals
  + Assess sensory disturbances
  + Evaluate Speech
  + Eye movement and pupillary size/reaction check

**Nursing Process: The patient with cerebral metastases p1982 1 Question**

(review mentioned reading assessment and diagnosis)

* Nursing Assessment includes
  + Baseline neurologic examination
    - Focus on how the patient is functioning, moving and walking
    - Adapting to weakness or paralysis and to loss of vision and speech
    - Dealing with seizures
  + Address symptoms that cause distress to the patient and affect the quality of life including
    - Pain
    - Respiratory problems
    - Bowel and bladder disorders
    - Sleep disturbances
    - Impairment of skin integrity
    - Fluid balance
    - Temperature regulation
  + Nutritional status is assessed because cachexia is common in patient w/metastases
    - Nurse explores changes associated with poor nutritional status
    - Take a dietary history to assess food intake, intolerance and preferences
  + Nurse works with other member of the healthcare team to assess the impact on the family in terms of
    - Home care
    - Altered relationships
    - Financial problems
    - Time pressure
    - Family problems
* Nursing Diagnoses may include the following (with details of “related to…” or “evidenced by…”)
  + Self care deficit
  + Imbalanced nutrition
  + Anxiety
  + Interrupted family process
  + Acute pain
  + Impaired gas exchange
  + Constipatin
  + Impaired urinary elimination
  + Sleep pattern disturbances
  + Impairment of skin integrity
  + Deficient fluid volume
  + Ineffective thermoregulation

**Spinal cord tumors: Assessment and Diagnosis Finding p1984 1 Question**

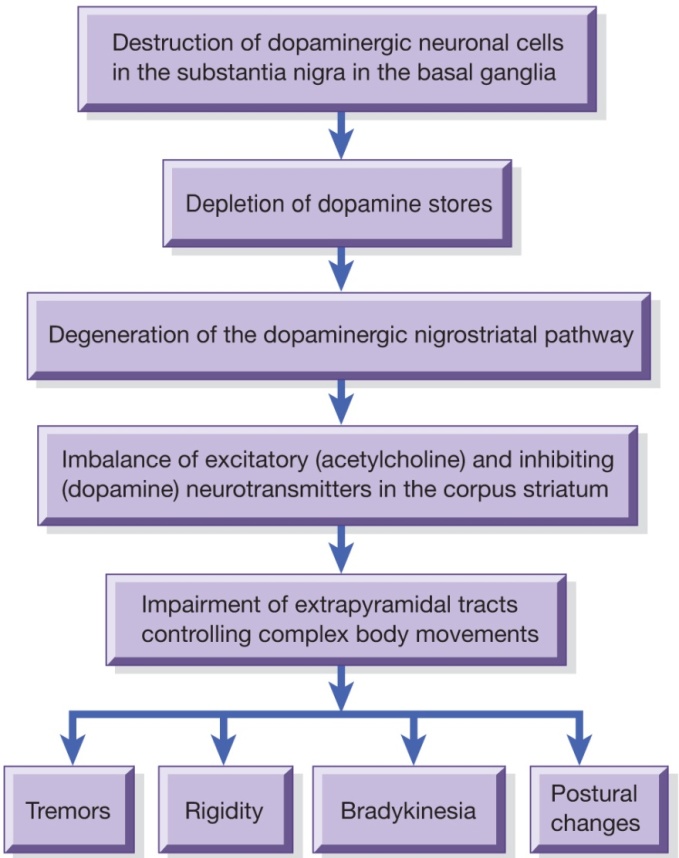
(review mentioned knowing what they are and how to diagnose them)

* Spinal Cord Tumors are classified according to their anatomic relation to the spinal cord
  + Intramedullary lesions (w/in the spinal cord)
  + Extramedullary-intradural lesions (within or under the spinal dura)
  + Extramedullary-extradural lesions(outside the dural membrane)
* Assessment
  + Neurologic exam includes
    - Assessment of pain
    - Loss of reflexes
    - Loss of sensation or motor function
    - Presence of weakness and paralysis
  + Additional assessment findings
    - Pain duration for longer than 1 mont
    - Elevated erythrocyte sedimentation rate
* Diagnosis
  + Diagnostic studies include
    - Xray
    - Radionuclide bone scans
    - CT scans
    - MRI scans – most commonly used and most sensitive diagnostic tool
      * Particularly helpful in detecting epidural spinal cord compression and metastases
    - Biopsy

**Parkinson’s disease: Pathophysiology/Surgical Management (Stereotactic Procedure) p1986 & 1988 1 Question**

(what is it, what is the pathophysiology? Specically mentioned the chart on p1986 in review, so I will list both)

* Parkinsons Disease is associated with decreaed levels of dopamine resulting from destruction of pigmented neuronal cells in the substantia nigra in the basal ganglia region of the brain
* Pathophysiology (from figure 65-4)
  + Nuclei in the substantia nigra project fibers to the corpus striatum
  + Nerve fibers carry dopamine to the corpus striatum
  + Loss of dopamine nerve cells from the brains substantia nigra is thought to be responsible for symptoms of Parkinson’s disease.



* Surgical Management
  + Stereotactic Procedures
    - Thalamotomy and pallidotomy is intended to interrupt the nerve pathways and thereby alleviate tremor or rigidity.
    - The procedure is effective in reducing Rigidity Bradykinesia and Dyskinesia thus improving motor function and ADLs in the immediate postoperative course
      * Thalamotomy a stereotactic electrical stimulator destroys part of the ventrolateral portion of the thalamus in an attempt to reduce tremor
        + Common complications are ataxia and hemiparesis
      * Pallidotomy involves destruction of part of the ventral aspect of the medial globus pallidus through electrical stimulation in patients with advanced disease
    - Patients are eligible if they have had an inadequate response to medical therapy
    - Patients MUST meet strict criteria to be eligible.
      * Patients with Idiopathic Parkinson’s who are taking max doses of antiparkinsonian meds typically qualify
      * NOT usually qualified are dementia and atypical Parkinson’s disease patients

**Huntington Disease: Trait, cause, pathophysiology p1992 1 Question**

(risk for inheritance mentioned in review) autosomal dominant genetic disorder

* Huntington’s disease is a chronic, progressive hereditary disease of the nervous system that results in choreiform movement and dementia.
  + It is transmitted as an autosomal dominant genetic disorder
    - Each child of a parent with the disease is at a 50% risk of inheriting the disorder
* Pathophysiology
  + Premature death of cells in
    - Striatum of the basal ganglia (involved in the control of movement)
    - Cortex (associated with thinking, memory, perception, judgment)
    - Cerebellum (coordinates voluntary muscle activity

**Muscular Dystrophies: common characteristics/nursing management p1996,1997**

* Muscular Dystrophies are a group of incurable muscle disoerders characterized by progressive weakening and wasting of the skeletal or voluntary muscle
* Common Characteristics include
  + Varying degrees of muscle wasting and weakness
  + Abnormal elevation in serum levels of muscle enzymes
* Nursing Management
  + Goal is to maintain function at optimal levels and to enhance the quality of life
  + Address physical needs without neglecting emotional needs
  + Patient and family are actively involved in decision making, including end-of-life decisions
  + During hospitalization draw from the knowledge of family and the patient as how to best care for the needs of the patient
  + Nursing Goals include:
    - Assisting the adolescent to make the transition to adult values and expectations while providing age-appropriate ongoing care
  + Other nursing interventions might include
    - Guidance in accessing adult health care
    - Finding appropriate programs in sex education

**Degenerative Disk Disease: Pathophysiology/Surgical Management p1997**

(review mentioned reading all the way to radiculopathy, it is important)

* In herniation of the intervertebral disk (ruptured disk), the nucleus of the disk protrudes into the annulus (fibrous ring around the disk), with subsequent nerve compression
  + Degenerative changes that occur with aging usually precede the protrusion or rupture of the nucleus
  + After trauma, the cartilage may be injured
* Degeneration in the disk allows the capsule to push back into the spinal canal OR it may rupture and allow the nucleus pulposus to be pushed back against the dural sac or against a spinal nerve
* Radiculopathy is pressure in the area of distribution of the involved nerve endings
  + Continued pressure may produce degenerative changes in the involved nerve, such as changes in sensation and deep tendon reflexes
* Surgical Management
  + Surgical excision of a herniated disk is performed if there is evidence of a progressing neurologic deficit and continuing pain or sciatica that are unresponsive to conservative management
  + Goal is to reduce the pressure on the nerve root to relieve pain and reverse neurologic deficits
  + Surgical Techniques include
    - Microdiskectomy- removal of herniated or extruded fragments of intervertebral disk material
    - Laminectomy – removal of the bone between the spinal process and facet pedicle junction to expose the neural elements of the spinal canal
    - Hemilaminectomy – removal of part of the lamina and part of the posterior arch of the vertebra
    - Partial laminectomy or laminotomy – creation of a hole in the lamina of a vertibra
    - Diskectomy with fusion – fusion of the vertebral spinous process with a bone graft
    - Foraminotomy- removal of the intervertebral foramen to increase the space for ezit of a spinal nerve